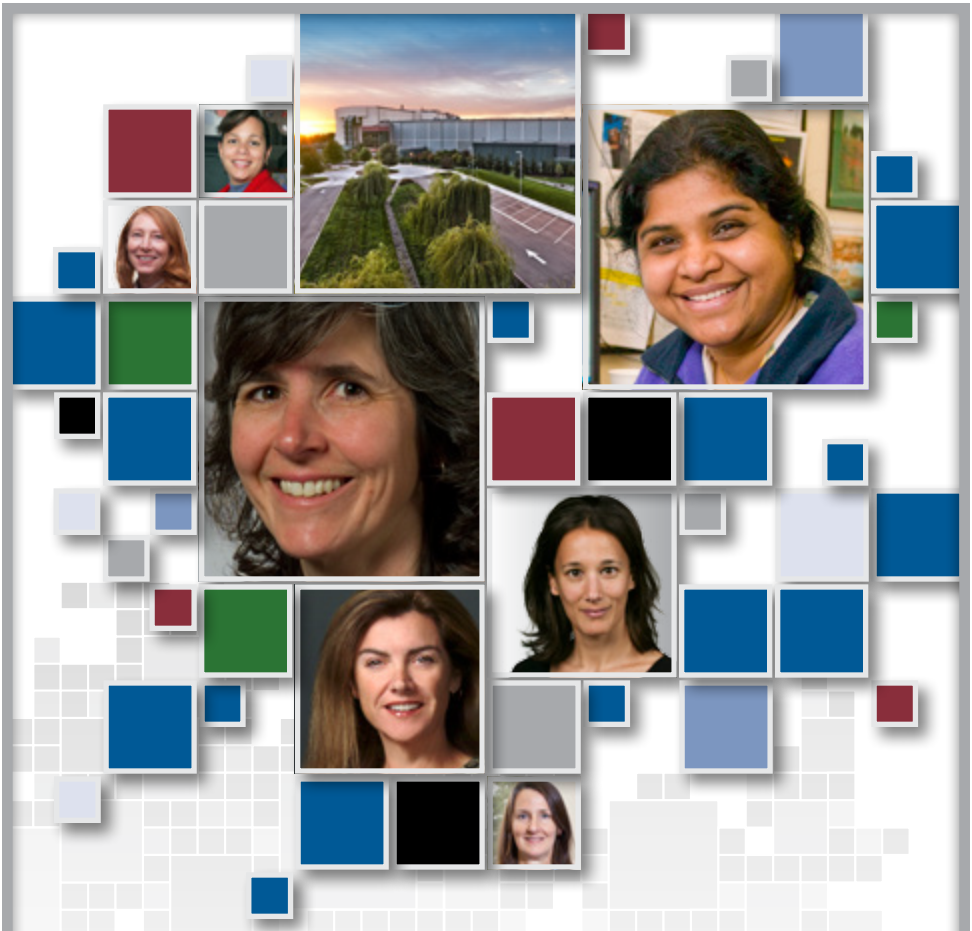

WOMEN OF NIF

2014

LLNL-MI-650047

lasers.llnl.gov

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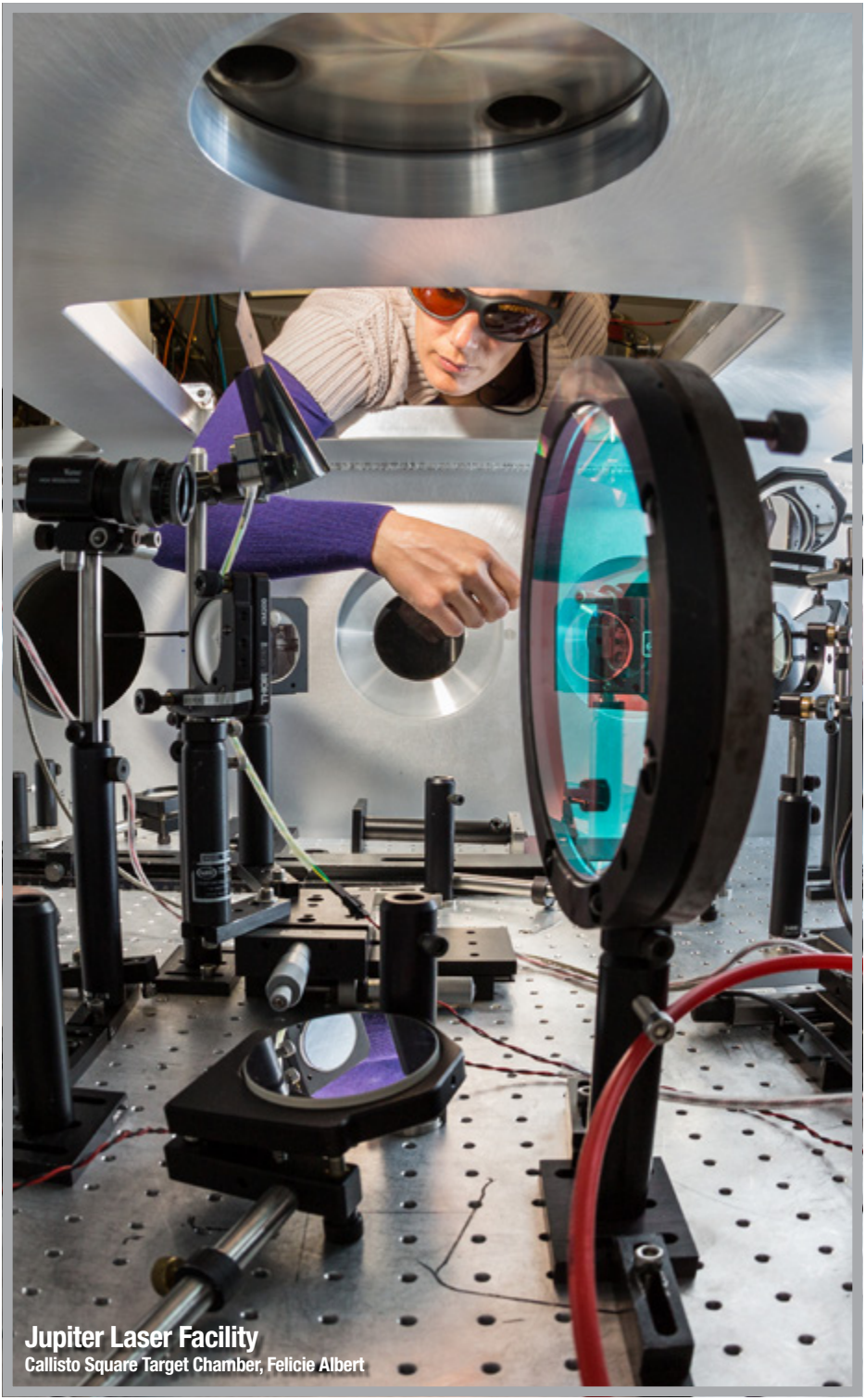
The Talented and Dedicated Women of NIF&PS

Among the missions of the NIF and Photon Science (NIF&PS) Directorate at Lawrence Livermore National Laboratory is operating the National Ignition Facility (NIF), the world's largest and highest-energy laser system. It takes a technical staff with a wide variety of expertise and experience to support operating NIF as a user facility and to develop and carry out a preeminent experimental program in high-energy-density science on NIF. Likewise, it takes a technical staff with a wide variety of expertise and experience to support other activities of the NIF&PS Directorate, where innovation and the development of critical technologies are key to advancing the state of the art in laser science – technical staff such as the women profiled in this brochure.

The skills of the women of NIF&PS range from chemistry (inorganic, organic, physical and nuclear), physics (applied, astro, experimental, nuclear, and plasma), and biology to engineering (aeronautical, chemical, electrical, mechanical, optical, and nuclear), material science, microscale fabrication, applied mathematics, statistics, computer science, information technology, and robotics. Their backgrounds and interests are equally varied. In this brochure, you will meet just a few of the talented and dedicated professional women without whom our success would not be possible. While the brochure focuses on the Directorate's scientists and engineers, the contributions of many other women working at NIF&PS, including technicians, analysts, designers, and administrative personnel, are equally vital to accomplishing our important missions: helping ensure the nation's security and continued scientific leadership, and furthering the pursuit of a clean, safe, and virtually inexhaustible source of energy.

Expanding your horizons (EYH), March 2, 2013
Watching Felicie Albert demonstrating a light guiding fiber


Total Internal Reflection
LASER LIGHT FOUNTAIN
"Funny things can happen when laser light travels from water to air."
Nif knows all the tricks of using laser light...
FUN WITH SCIENCE



Jupiter Laser Facility
Callisto Square Target Chamber, Felicie Albert

Physics

Félicie Albert

Experimental Physicist

Dr. Félicie Albert is an experimental physicist for the National Ignition Facility and Photon Science Directorate at Lawrence Livermore National Laboratory (LLNL). She earned her bachelor's degree in optical engineering from the Ecole Nationale Supérieure de Physique de Marseille in France, her MS in optics from the University of Central Florida and her PhD in physics from the Ecole Polytechnique in France in 2007.

Félicie combined the love of astronomy she has had since her childhood with her natural scientific curiosity and decided to study optics and lasers in college.

In early 2008, Félicie was hired as a post-doctoral researcher at LLNL and became a permanent member of the scientific staff in 2010. Since joining LLNL, Félicie has conducted many experiments using high-intensity lasers. Her expertise in this area has allowed her to generate novel sources of particles, x-rays and gamma rays using lasers for applications in homeland security, medicine, biology and industry.

Favorites and noteworthy

- Favorite subjects in high school: Physics
- Favorite subjects in college: Optics and plasma physics
- Noteworthy accomplishments: Winner of LLNL's best postdoc publication in 2011, presenter of an invited talk at the world's largest plasma physics conference, publications in Physical Review and Nature journals.

Electrical Engineering

Rita Bettenhausen

Computer Scientist

As the youngest of twelve children, Rita Bettenhausen never expected to go to college. However, she won a small scholarship from a woman's club that paid for community college, where she studied secretarial science and earned an AAS degree. She began work at Bethlehem Steel as a secretary for the Management Information Systems group. There, she was introduced to computers, which led her to begin night classes studying math. This in turn led to her earning a BS in electrical engineering from Penn State.

Throughout her career Rita focused mainly on Control and Monitoring systems both before she came to LLNL (automation of a steel rolling mill and a semiconductor processing line) and after (Atomic Vapor Laser Isotope Separation [AVLIS] vapor monitoring and NIF controls). During her time working for NIF, she designed the controls hardware for the plasma electrode Pockels cell (PEPC). More recently, she designed and implemented an automated, data driven system that analyzes the target diagnostic data collected on NIF experiments.

Sandra Brereton

Operational Readiness Manager

Dr. Sandra Brereton is the Operational Readiness Manager for the National Ignition Facility and Photon Science Directorate at Lawrence Livermore National Laboratory (LLNL). She earned her master's and PhD degrees in nuclear engineering from MIT and her bachelor's degree in chemical engineering from the University of Toronto.

Before earning her undergraduate degree, she spent two summers working with an electrical utility in their Fusion Energy Program, which paved her path in graduate school. At MIT, she studied fusion technology, receiving both her master's and PhD degrees in less than four years.

For most of her career at LLNL, she has been involved with NIF, dealing with safety and radiological issues, as well as project management. In this role, she is responsible for coordinating the preparations for NIF to become a fully operational facility. She has been at LLNL for 22 years.

Favorites and noteworthy

- Favorite subjects in high school: Physics and chemistry
- Favorite subject in college: Nuclear physics
- Noteworthy accomplishments: Many academic awards in high school and college; completing several marathons, including the Boston Marathon.

Masters of Business Administrative

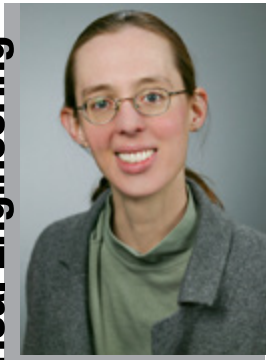
Barbara Brooks
Principal Associate Director Resource Manager

Barbara Brooks is the Principal Associate Director Resource Manager for the National Ignition Facility and Photon Science Directorate at Lawrence Livermore National Laboratory (LLNL). While working at LLNL, Barbara graduated cum laude from the University of the Pacific with a Bachelor of Science degree in accounting and an MBA from California State University.

During her career at LLNL Barbara managed the technical publications and presentation group in the former Laser Program for 17 years.For six years she was a senior financial analyst supporting the National Ignition Facility. She has been in her current position for 6-1/2 years.

Favorites and noteworthy

- Favorite subject in high school: Math
- Favorite subject in college: Finance.



Amber Bullington

Physicist

Dr. Amber Bullington is a physicist in the Photon Science and Applications division. Amber received her BS degree from Cornell University. She joined LLNL in July of 2009 after completing her MS and PhD degrees in Electrical Engineering at Stanford University.

For the Laser Inertial Fusion Energy project, Amber is investigating thermally induced birefringence in glass slab amplifiers and nonlinear optical materials for electro-optic switches. She has performed beam propagation modeling and design of a thermally robust frequency converter for Laser Inertial Fusion Energy. Her latest work involves thermo-optic modeling of an amplifier design for the Giga-shot Optical Laser Demonstrator (GOLD) project. In addition, she is assisting with thermal birefringence issues for NIF.

Mechanical Engineering

Rebecca Butlin

NIC Target Fabrication Production Manager

Becky Butlin is a mechanical engineer and is currently the NIF Target Fabrication production manager at Lawrence Livermore National Laboratory (LLNL). She earned her BS degree in mechanical engineering from Cal Poly San Luis Obispo in 2003 and soon after began her career at LLNL. She then earned her MS degree in mechanical engineering from UC Davis while working at LLNL.

At Cal Poly, she received the Academic Achievement Award for graduating at the top of her engineering class. As a natural leader, she often led class projects, Bible studies, and work projects, as well as mentoring and teaching others.

Throughout college and her early career, Becky focused on engineering design and analysis. It wasn't until she was asked to manage an assembly team that she found her affinity for continual process improvements and streamlining production.

Favorites and noteworthy

- Favorite subjects in high school: Art, trigonometry, calculus, and physics
- Favorite subjects in college: Statics, dynamics, and mechanical design
- Noteworthy accomplishments: Successfully leading the assembly team for over 600 large optical assemblies for NIF. Successfully leading the NIC Target Assembly team.

Debra Callahan

Physicist

Dr. Debra Callahan is a physicist and group leader in the Weapons and Complex Integration organization at LLNL. She leads the Hohlraum System Integration working group within the National Ignition Campaign. She received her BS degree in physics and mathematics from the University of Denver in 1985. She spent two years at Cornell University before moving to LLNL to finish her PhD at the University of California, Davis, in 1993.

Debra has spent her career at LLNL working on ICF and inertial fusion energy (IFE). In 2004, she switched from heavy-ion-driven IFE target design to NIF target design. Her specialty is the physics and design of hohlraums for inertial confinement fusion (ICF) targets. Her ignition hohlraum design has been the basis for the hohlraum shots on NIF since 2009.

She is currently serving on the Executive Committee of the American Physical Society Division of Plasma Physics and has been active in promoting women in plasma physics.

Electrical Engineering

Emily Carr

Requirements Verification Engineer

Dr. Emily Carr is the Requirements Verification Engineer for Cryogenic and Warm Target Fabrication for NIF at LLNL. She earned her BS degree in physics from Central Washington University and her MS and PhD degrees in electrical engineering from the University of California, Davis.

While an undergraduate, Emily was a McNair Scholar and performed astronomical research on variable stars. Later, as a National Science Foundation Research Experience as an Undergraduate participant at UC Irvine, she helped produce algorithms to align the segmented mirrors of the Keck Telescopes.

Emily completed her PhD research as a student employee graduate research fellow at LLNL in the microtechnology center in the area of design, fabrication and testing of micro-mirror arrays for adaptive optics applications. Today, she uses the skills learned during her graduate research to perform the final quality control and verify that the cryogenic and warm targets being installed at NIF are being built to specification.

Favorites and noteworthy

- Favorite Subjects in High School: Physics, Calculus and Band
- Favorite Subjects in College: Physics, MEMS Design, Tap Dancing and Welding and Fabrication
- Noteworthy accomplishments: Obtained my PhD, worked as a MEMS Engineer at a successful startup for 4 years, supported the production of 300 Cryogenic Targets for NIF.

Anu Chakicherla

Computer Scientist

Dr. Anu Chakicherla is a computer scientist supporting the National Ignition Facility and Photon Science Directorate at Lawrence Livermore National Laboratory (LLNL). She earned her PhD in molecular biology from the University of Maryland, College Park, and completed the Bioinformatics program at California State University, East Bay.

As a post-doctoral fellow at Children's Hospital Oakland Research Institute and a student in computer science at Diablo Valley College, Anu was recruited to work in the Information Technology Division at Lawrence Berkeley Lab. She began working at LLNL in 2003. Anu has co-authored several peer-reviewed publications ranging from biostatistics, bioinformatics, carcinogens, and protein modeling to correcting raw diagnostic data at NIF.

Anu supports outreach programs at the Lab, has conducted the Edward Teller STEP bioinformatics workshop series, mentored several summer interns, and adjudicated at the Tri-Valley Science and Engineering Fair (SEF), Intel International SEF and the Science Bowl. She successfully implemented a Six Sigma project supporting the IT systems at the NIF and is working on new process improvement efforts.

Favorites and noteworthy

- Favorite Subjects in High School: Physics and languages
- Favorite Subjects in College: Data analysis, NMR of large molecules
- Noteworthy Accomplishments: Six Sigma Yellow Belt certification; research and publications with various groups within and outside LLNL.

Cathy Chang

Software Quality Assurance Engineer

Cathy Chang is a Software Quality Assurance Engineer for the National Ignition Facility at Lawrence Livermore National Laboratory (LLNL). She earned her BS degree in environmental toxicology from the University of California, Davis (UCD), her BS degree in computer science from San Jose State University (SJSU) and her MS degree in computer science from California State University, Hayward.

Cathy was born in Hong Kong. Her family immigrated to the United States when she was 7 in hopes of getting a better education. Knowing very little English, she could only excel in Math. She did not attend a regular English class until 7th grade.

After graduating from UCD, she worked 4 years as a chemist. While studying at SJSU, she worked as an intern at ELetter, Inc. Her QA Manager encouraged and mentored her to go into software testing, and she stayed in that field ever since. She began working at LLNL in July 2004 and continues to test web and standalone applications to this day.

Favorites and noteworthy

- Favorite Subjects in High School: Calculus, Home Economics
- Favorite Subjects in College: Food Toxicology, Combinatorics
- Noteworthy Accomplishments: Fluent in Cantonese and English. Scored 5 in A.P. Calculus. Built a computer. Fixed things around the house. Completed numerous sewing/knitting/crochet projects.

Electrical Engineering/
Computer Engineering

Yiping Chen

Computer Scientist

Yiping Chen currently works on software design and development for the Integrated Computer Control System (ICCS) Graphical User Interface (GUI) and Maintenance and Commissioning Tools.After graduating from the Illinois Institute of Technology (IIT) Graduate College in 1991, she worked for several software companies as senior/ lead developer to design and develop commercial software products.

She began working at LLNL in 2004 as part of NIF Controls and Information Systems group, where she was responsible for Campaign Manager software design and development. Previously, she worked as an assistant professor in the Electrical Engineering Department of Fuzhou University in China.

Favorites and noteworthy

- Favorite Subjects in High School: Mathematics and physics
- Favorite Subjects in College: Electrical engineering and computer science.

Marina Chiarappa-Zucca

Biologist/Chemist

Marina Chiarappa-Zucca is a biologist/chemist for the National Ignition Facility and Photon Science Directorate at Lawrence Livermore National Laboratory (LLNL). She earned her B.A. degree in biology from U.C., Davis, and her MS degree in marine biology from the University of Alabama in Birmingham.

Marina worked at the University of Wisconsin on research in environmental toxicology. She has been at the LLNL for 25 years. Most of her career has been dedicated to doing research using her analytical chemistry and biology skills to solve problems in the areas of environmental remediation and biodefense. At NIF, she applies her expertise to issues related to tritium and beryllium and operates the mass spectrometer that is used to determine the gas composition for ignition laser shots.

Favorites and noteworthy

- Favorite subject in high school: Biology
- Favorite subject in college: Invertebrate zoology
- Teaching Environmental Science and Field Research Techniques at De Anza College as adjunct faculty; Receiving the LLNL Director's Performance Award for providing novel technologies for remediating a superfund site.

Nuclear Physics

Jennifer Church

Nuclear Physicist

Dr. Jennifer Church is a nuclear physicist supporting NIF, Global Security and Physical and Life Sciences. She earned a BS in biology from UC Davis, and her MS and PhD in nuclear physics from Michigan State University focusing on intermediate energy rare isotope beam experiments and nuclear structure.

Growing up in a rural mountain town, she participated in basketball, volleyball and track, with her basketball and track teams winning league championships, and she was voted the Feather River League's most valuable basketball playerl her senior year. As class valedictorian, she also earned several scholarships including the KHSL Channel 12 scholar-athlete of the year.

During college, Jennifer spent her summers with the U.S. Forest Service fighting forest fires on both engine and helicopter crews. After college, she did her post-doctoral work at LLNL, and since then has worked on many applications of radiation detection- cargo screening, nuclear emergency response, and on a gamma-ray diagnostic at NIF.

Favorites and noteworthy

- Favorite subjects in high school: Math, languages and world philosophy
- Favorite subjects in college: Laboratory courses and quantum mechanics
- Noteworthy Accomplishments: Earning her NNSA nuclear emergency response team qualification and being awarded LLNL Science and Technology Team Award for developing SNM cargo screening techniques.

Computer Science

Raelyn Clark

Computer Scientist

Raelyn Clark is a computer scientist supporting for the National Ignition Facility and Photon Science Directorate at Lawrence Livermore National Laboratory (LLNL). She earned her BS degree in computer science from Duquesne University in Pennsylvania. She was awarded an Air Force ROTC scholarship, so after college, Raelyn entered the Air Force as a second lieutenant and served proudly for eight years.

As a member of both U.S. and A.F. Space Commands, she was responsible for planning satellite and space shuttle launches, as well as monitoring satellite positions in space. She began working at LLNL in 2001 as part of the NIF Verification and Validation team, where she was responsible for software testing of various systems.

Favorites and noteworthy

- Favorite subjects in high school: Accounting and computers
- Favorite subject in college: Database design
- Noteworthy accomplishments: Serving in the military; introducing new methods for organizing and adding configuration management member to NIF Early Light (NEL) and the Main Laser Manual Controls Commissioning team.

Solid State Physics & Chemical Engineering

Pascale Di Nicola

Physicist

Pascale Di Nicola is in charge of the NIF pointing working group as the Responsible Individual for the NIF pointing performance and is also a core member of the Target & Laser Interaction Sphere (TaLIS) group. She also supports Operations on activities relative to target and beam alignment to Target Chamber Center. In 1995, she earned her MS in solid state physics and chemical engineering at the Institute of the Sciences of Matter and Radiation and at the National Superior Engineering School, Caen University, France. The same year, she also earned a Diploma of Advanced Studies in Solid State Physics, Caen University, France.

Over her career, Pascale has held a variety of key positions in the semiconductor industry. She fabricated, assembled or metrologized targets for experiments conducted on five different large laser facilities from CEA, Laboratoire d'Utilisation des Laser Intenses (LULI), Laboratory for Laser Energetics (LLE) University of Rochester and Lawrence Livermore National Laboratory (LLNL). After taking part in the first system shot to Target Chamber Center as an Invited Scientist in 2008, Pascale was hired by LLNL in 2009 to work on NIF.

Favorites and noteworthy

- Favorite subjects in high school: Science, math and foreign languages (German and English)
- Favorite subjects in college: Solid state physics.

Pamela Divoky

Facility Project Manager

Pamela Divoky manages various construction and demolition projects within the NIF Directorate. She earned her engineering degree from California State Polytechnic University in 1990.

After graduation, Pamela initially worked as an environmental engineer and manager and then transitioned into facility engineering and construction in various high tech companies located in the Bay Area.

Pamela has developed a real-time application for total metals analysis for wastewater treatment system at high tech wafer fabrication facility and managed construction projects to remove and dismantle unique legacy equipment and structures within the NIF Directorate.

Favorites and noteworthy

- Favorite Subjects in High School: Math and Physics
- Favorite Subjects in College: Operations Research Planning and Control, Facility Layout and Design
- Noteworthy accomplishment: Developed real-time application for total metals analysis for waste water treatment system. Managed construction projects to remove unique legacy equipment and structures within NIF.

Chemical Engineering

Rebecca Dylla Spears

Chemical Engineer

As a chemical engineer at LLNL, Dr. Rebecca Dylla Spears primarily supports the study and growth of cryogenic hydrogen fuel layers for ignition experiments on NIF. She has also supported efforts to rapidly grow large, potassium dihydrogen phosphate crystals used for some of the optics on NIF.

Rebecca earned a BS in chemical engineering and a B.A. in liberal arts from the University of Texas at Austin. As a BS engineer, Rebecca held research positions at the Clorox Company and LLNL before earning a PhD in chemical engineering at the University of California, Berkeley. Her graduate research involved the use of microfluidic stagnation point flows to trap and stretch DNA for detection of tagged sequences.

Favorites and noteworthy

- Favorite subjects in high school: Chemistry, mathematics and literature
- Favorite subjects in college: Transport phenomena, chemistry, and literature
- Noteworthy accomplishments: NSF Graduate Research Fellowship recipient; completed four marathons.

Aeronautical Engineering

Beth Dzenitis

Cryogenic Target Production Manager

Beth Dzenitis is a High-Z Materials Campaign Project Engineer for the National Ignition Facility and Photon Science Directorate at Lawrence Livermore National Laboratory (LLNL). She earned her master's degree in aeronautical engineering from the Massachusetts Institute of Technology and her bachelor's degree in aerospace engineering and mechanics from the University of Minnesota.

Beth has over 24 years of experience as a mechanical and aeronautical engineer, technical group leader, and project manager. Her first engineering position was at the Johnson Space Center in Houston, Texas. There she worked on the mechanical design of space station and space shuttle hardware. After leaving NASA for graduate school, she worked for the Boeing Company in St. Louis. Her primary responsibility was stability and control wind tunnel testing for the F/A-18E/F military aircraft.

Since joining LLNL in 2001, Beth has worked on NIF as an engineer and as a production lead. In 2006, she began to work on inertial confinement fusion targets for the National Ignition Campaign (NIC). Her team of over 30 engineers and technicians provide assembly capability for cryogenic tuning and ignition targets for NIC. Currently, she is managing the assembly of over 200 complex, cryogenic targets on the way to the first credible ignition attempt on NIF.

Favorites and noteworthy

- Favorite subjects in high school: math and industrial arts
- Favorite subjects in college: Fluid mechanics and chemistry
- Noteworthy accomplishments: awarded three US patents for space hardware.

Maxine Emerich

Mechanical and Robotics Engineer

Maxine Emerich is a production engineer for General Atomics working for the National Ignition Facility at Lawrence Livermore National Laboratory (LLNL). She earned her bachelor's degree in engineering from Sweet Briar College, a small liberal arts college for women. She is currently pursuing her master's degree in engineering.

Maxine was homeschooled in high school and wanted to be a large animal vet, so began pursuing biology and engineering for a biomedical engineering degree. However, she took a course in dynamics engineering and volunteered on a high school robotics team. After that, she pursued robotics as her degree.

This is Maxine's first job after college. Throughout college and high school, she was also an international rider in horse jumping and was on track to compete in the Olympics.

Favorites and noteworthy

- Favorite high school subject: Math
- Favorite college sublject: Electromechanical engineering
- Noteworthy accomplishments: honors summer research in robotics; a paper published in the Honors journal; a member of the third place team for the Ability One National Design Challenge.

Peg Folta
NIF Computing Division Leader

Peg Folta leads the NIF Computing Division, 100-person workforce with expertise in applying the latest computing technologies to plan, configure, control and analyze NIF experiments. She is currently partnering with the NIF User Office on improvements to NIF tools and systems and is focused on the development of a strategy to effectively guide experiments through the NIF from conception through execution. Peg has over 27 years of experience in delivering integrated software solutions to large-scale, high technology systems in the fields of controls, bioinformatics, and computational biology. She was a member of the Atomic Vapor Laser Isotope Separation (AVLIS) Program where she helped define the AVLIS plant control system architecture, and led the development of the supervisory control system for the LLNL demonstration facility. She developed state-of-the-art control software that adapted to dynamic optical configurations, which was later used in NIF. Peg has a Masters in Applied Mathematics from the University of Missouri and a BS and BSE in Mathematics from Truman State. She recently served as Science Program Chair for ICALEPCS 2013, an international conference dedicated to large-scale control systems.

Jessie Gaylord

Computer Scientist

Jessie Gaylord is a computer scientist for the National Ignition Facility at Lawrence Livermore National Laboratory. She earned a B.A. degree cum laude in economics with a minor in mathematics from Washington University in St. Louis, Missouri. She earned an MS with distinction in computer science from California State University, Chico.

Jessie focused her college studies on math, macroeconomics, and computer science. Since college she has worked as a corporate buyer, market analyst, product manager, cost analyst, and business analyst. Each of these positions has a substantial reliance on information systems, and Jessie started improving data processes and enhancing or creating new reporting tools when existing systems did not do the job.

By the time Jessie started work at NIF in 2001, her work focus was almost entirely on creating business intelligence applications and reporting systems. While working at NIF, she earned her MS in computer science to formalize and further her skills in database technology and software engineering.

Favorites and noteworthy

- Favorite subjects in high school: Math, art, and music
- Favorite subjects in college: Math, data sciences, and graphical design
- Noteworthy accomplishments: Inducted into international economics and international computer science honor societies; independently designed and created web based graphical metrics system used to manage optics, targets, and work at NIF.

Kangmei Gu

Computer Scientist

Kangmei Gu works for the NIF Database team, supporting the area of Integrated Computers and Controls configuration, shot modeling and target diagnostics. She grew up in Shanghai, China. After graduating from college there in 1988, she went to Canada to pursue a MS degree in physics from the University of Montreal, with a full scholarship.

Kangmei moved to the U.S. in 1995 and worked as a process engineer, software engineer, and software quality assurance engineer for various companies in the Bay Area.She began working at LLNL in 2003 as part of the NIF Verification and Validation team. She was responsible for fully integrated shot testing for eight years.

Favorites and noteworthy

- Favorite Subjects in High School: Math and Chemistry
- Favorite Subjects in College: Solid State Physics
- Noteworthy Accomplishments: Developed the automation software for GaAs poly synthesis weighing station, improving poly crystal growth yield from 70% to 90%. Developed automation software for optical inspection equipment for the disk drive industry.

Statistics

Gayatri Gururangan
Systems Engineer

Gayatri Gururangan is a systems engineer for RAM (Reliability Availability & Maintainability) for the National Ignition Facility and Photon Science Directorate at Lawrence Livermore National Laboratory (LLNL). She earned her MS degree in statistics from Stanford University.

When she was in high school she knew that she wanted to pursue a career that involved both mathematics and statistics, so an analytical job in statistical/mathematical modeling seemed to be the perfect choice.

For the past 15 years she has worked in many companies in the Bay Area as a statistician working on challenging projects that involved simulation, modeling and forecasting. She had an opportunity to interview at LLNL and has been here for 10 years working in NIF on various capacity modeling and RAM projects.

Favorites and noteworthy

- Favorite subjects in high school: Mathematics, statistics, and music
- Favorite subject in college: Statistics
- Noteworthy accomplishments: Created capacity models for NIF LRU build out; helped create a NIF RAM database to track operational failures.

Diane Hardy

Operations/Project Manager

Diane Hardy is the Schedule Manager for National Ignition Facility Operation at LLNL. She has several degrees, including mechanical engineering from National University and an MBA from Saint Mary's College of California. She even earned her plumber's license when working as a self-employed contractor, building projects for the Army Corps of Engineers and University of California.

Prior to working at the Laboratory, Diane worked as construction manager and project engineer for municipal water and wastewater treatment facilities throughout Northern California. She was certified as a Project Management Professional with Project Management Institute (PMI) and is currently a member of INCOSE (International Council of Systems Engineers). She is passionate about improving the efficiency and productivity of an organization through applied uses of project planning, preparation and performance measurement.

Favorites and noteworthy

- Favorite subjects in high school: Drafting, trigonometry, and physics
- Favorite subjects in college: Hydrodynamics, materials science, and operations management
- Noteworthy accomplishments: LLNL Director's award for Earned Value Management Implementation; LLNL Director's Award – Operational Capability Upgrade Project Performance.

Organic Chemistry

Ruth Hawley
Chemist

Dr. Ruth Hawley is a chemist supporting the National Ignition Facility and Photon Science Directorate at Lawrence Livermore National Laboratory (LLNL). She earned her BS degree in chemistry from the University of California (Davis) and her PhD in organic chemistry from Arizona State University.

During her career at LLNL, Ruth has lead projects working on analytical methods for chemical agents, Freon-replacement by-products, and hazardous waste. She has served as a group leader and deputy division leader, and she has taken LLNL-developed manufacturing methods and successfully deployed them at commercial vendors.

Since 1997, Ruth has supported the NIF, first in the procurement of specialty chemicals, then in the commercialization of the rapid crystal growth process and subsequent manufacturing of the crystalline optics used on the NIF. Growing large crystals of KDP was one of the most enjoyable projects she managed for NIF. She has also managed the on-site NIF optics cleaning and coating facility, and successfully implemented the optics loop for fused silica optics.

Favorites and noteworthy

- Favorite subjects in high school: Chemistry, English, and Spanish
- Favorite subjects in college: Organic chemistry
- Noteworthy Accomplishments: Taking NIF rapid crystal growth from laboratory development to commercial production; quadrupling on-site NIF optics processing rates for the recycle loop.

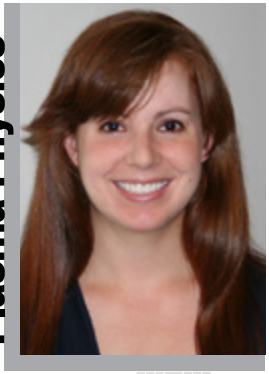
Denise Hinkel

Group Leader, Plasma Theory

Dr. Denise Hinkel is the group leader for the Plasma Theory group in the Weapons and Complex Integration (WCI) Directorate at LLNL. She received her PhD in physics in 1990 from the University of California, Los Angeles. She began her career at LLNL in 1992 as a postdoctoral physicist in X Division.

Over the years, Denise has been a major contributor to the NIF effort, both as a plasma theoretician and as a target physicist for inertial confinement fusion and high-energy-density (HED) science. In addition to her contributions in these areas, she also has served for several years as the WCI point of contact, managing the directorate's Laboratory Directed Research and Development portfolio.

Denise has been active in student outreach at Princeton and serves as a mentor in the HED Summer Student Program at LLNL. She is an active member of the American Physical Society and was named a fellow in 2008.



Laura Hopkins

Design Physicist

In June 2012, Dr. Laura Hopkins joined LLNL as a design physicist with WCI/AX Division and the National Ignition Facility and has been working on laser pulse and target designs for a variety of experiments on the NIF, including shock timing keyhole targets, the High Foot Campaign, and the indirect-drive exploding pusher. She earned a BA in chemistry and physics from Dartmouth College. For her graduate work at Princeton University, she worked on the Lithium Tokamak eXperiment at the Princeton Plasma Physics Laboratory, where she developed and fielded the system of magnetic diagnostics and was the chief tokamak operator.

After graduating with a PhD in plasma physics, Laura served as a Congressional Fellow in the U.S. House of Representatives and then the U.S. Senate. During this time, her portfolios ranged from topics in waste management regulations to arms control treaties. Laura also manages a science communication and outreach project called Why-Sci (www.why-sci.com), which seeks to build a forum for scientists to communicate their research to the public and for non-scientists to learn about ongoing research projects.

Favorites and noteworthy

- Favorite subjects in high school: Chemistry, physics, and literature
- Favorite subjects in college: Chemistry, physics, vertebrate zoology, and Egyptian art history
- Noteworthy accomplishments: NNSA Stewardship Science Graduate Fellow; APS mini-grant for Public Outreach recipient; Assistant Editor for APS Forum on Physics and Society newsletter.

Laura Kegelmeyer

Lead, NIF Optics Inspection Analysis

Laura Kegelmeyer is the team lead and founder of the National Ignition Facility Optics Inspection Analysis. She earned her bachelor's degree in biomedical engineering and masters in electrical engineering from Boston University.

Laura first came to LLNL to study the physics of cells. During her dozen years with LLNL's biophysics program, she researched topics such as genetic abnormalities and DNA probe mapping. This expertise in biomedical image analysis brought her to NIF in 2000. Her automated inspection effort has extended its scope to include target and cryogenic fuel layer inspection to streamline analysis of, and eventually predict the quality of, the frozen fuel layers early in the crystal growth process.

She also enjoys synergistic teamwork and brainstorming. From her master's project to her 25 years at the Laboratory, she has worked with a number of teams and enjoys pulling together competencies to achieve a result.

Favorites and noteworthy

- Favorite Subjects in High School: Qualitative analytical chemistry
- Favorite Subjects in College: Electric Circuit Theory, Biomedical Engineering Senior Project (develop respiratory-impedance measuring device).
- Fundamental groundwork in computer-aided digital mammography. Automated optics inspection analysis for the high power NIF laser.

Terry Land

Deputy Program Manager, NIF Operations and NIF Site Manager

Dr. Terry Land is the Assistant Project Manager for the National Ignition Facility and Photon Science Directorate. She earned her doctorate in physical chemistry from the University of California, Irvine. During that time, she spent a year as a graduate student scholar in Germany. After earning her PhD, she began her career as a post-doc in the Chemistry department at LLNL and has been here for 19 years.

During her scientific career, Terry has performed research in various fields including the thermal decomposition chemistry and crystal morphology of energetic materials, the fundamental physics of crystal growth (including protein, virus, organic and inorganic crystals) and forensic science. She is responsible for various aspects of project integration and coordination, meeting deliverables and milestones, interfacing with DOE sponsors, and demonstrating readiness to conduct routine operations safely as construction is completed.

Favorites and noteworthy

- Favorite subjects in high school: Biology and chemistry
- Favorite subject in college: Chemistry (Because it has applications in medicine, biology, agriculture, environmental and physical sciences).

Tanza Lewis

Layered Shot Responsible Scientist

Dr. Tanza Lewis is a layered shot responsible scientist and shot director in training for the National Ignition Facility at Lawrence Livermore National Laboratory. She earned a BS degree in chemistry and a PhD in physical chemistry from the University of California, Irvine.

During high school and college, Tanza focused on chemistry, physics, advanced mathematics, and sports. She was nominated for athlete of the year at her high school and played Division 1 softball as a pitcher during her first year in college. While completing her doctorate, she did research at the BESSY synchrotron facility in Berlin, and her frequent trips to Berlin gave her an opportunity to travel much of Europe. Before completing her PhD, she earned the Nottingham Prize Award for her work in surface science.

After completing her PhD in 2011, Tanza began working at LLNL as part of the Cryogenic Layering team, where she is responsible for creating the deuterium-tritium ice layers for ignition laser shots. She is also in training as a shot director and will soon join the team responsible for successfully and safely executing the complex experiments in the NIF.

Favorites and noteworthy

- Favorite subjects in high school: Chemistry and physics
- Favorite subject in college: Quantum mechanics
- Noteworthy accomplishments: NIF Operations Leadership Program 2012; Nottingham Prize Award Winner 2011; American Chemical Society Analytical Chemistry Award 2007.

Tammy Ma

Physicist

Dr. Tammy Ma is a physicist in the National Ignition Facility and Photon Science Directorate's Inertial Confinement Fusion & High Energy Density Science Program at Lawrence Livermore National Laboratory (LLNL). She earned her BS degree in aerospace engineering from Caltech, and her MS and PhD from the University of California, San Diego.

In middle school and high school, Tammy was lucky to have great science teachers and became fascinated with exploring and understanding the world through science. Since then, she has dabbled in various types of research, from microbiology to 3D printers to spacecraft thrusters to high power lasers.

Following graduate school, Tammy completed a postdoc at LLNL before her recent conversion to a staff scientist. Her current research involves applying x-ray Thomson scattering to characterize conditions of warm dense matter, as well as participating in the Ignition Campaign, serving as the RI (responsible individual) for the full spectrum of ignition shots and co-RS (responsible scientist) for an x-ray imaging diagnostic. She has also helped develop a methodology for determining mix and pressure in NIF implosions.

Favorites and noteworthy

- Favorite subjects in high school: Physics, biology, and American history
- Favorite subjects in college: Spacecraft systems and plasma physics
- Noteworthy accomplishments: Outstanding Graduate Student Award in the Mechanical & Aerospace Engineering Department, UCSD; LLNL Lawrence Scholar Program Fellow.

Anastacia Manuel

Optical Engineer

Dr. Stacie Manuel is currently working in the Optical Design and Engineering group. She earned her BS and ME in engineering physics from Cornell University, then joined LLNL to work on NIF after graduation. After several years at NIF, she worked briefly on a remote sensing project at LLNL before taking a leave of absence to go to graduate school at the College of Optical Sciences in Tucson, Arizona.

During graduate school, Stacie was a member of the Large Optics Fabrication and Testing research group. During the summers, she returned to LLNL to work on the Large Synoptic Survey Telescope (LSST). After receiving her PhD in Optical Engineering in December 2009, she again returned to continue working at NIF.

Favorites and noteworthy

- Favorite subjects in high school: Math, science and band
- Favorite subject in college: Optics.

Kathleen McCandless

Computer Scientist

Kathleen McCandless is a computer scientist supporting the National Ignition Facility (NIF) at Lawrence Livermore National Laboratory. She earned her B.A. in physics at Scripps College and earned the top senior thesis award for the physical sciences. While at Scripps, Kathleen also interned at the Stanford Linear Accelerator Center.

In 1998, she joined Lawrence Livermore National Laboratory working for the Weapons and Complex Integration directorate. She then returned to school and earned her masters in computer science from Stanford University in 2005 while working full time. She joined NIF in 2007 where she works with a multi-disciplinary team of scientists, continues to explore physics concepts and investigates new JavaScript-based web technologies.

Favorites and noteworthy

- Favorite Subjects in High School: Calculus and Anatomy
- Favorite Subjects in College: Computational Physics and Anthropology
- Noteworthy Accomplishments: Earning Masters while working full-time and becoming a mother. Improving performance of the Virtual Beam Line (VBL) code and helping Laser Operations Performance Model (LPOM) group streamline their modeling capabilities.

Robin Miles

Lead, Laser Inertial Fusion Energy Target Engineering

Robin Miles is the engineering lead for the Laser Inertial Fusion Energy targets, which are targets being created for a future commercial fusion plant. She has a BS in mechanical engineering from the Massachusetts Institute of Technology, a MS in mechanical engineering from Stanford, and an MBA from the University of California at Berkeley.

While in high school in Lexington, Massachusetts, she took AP classes in calculus, chemistry and physics. She was always interested in science in school. Prior to coming to LLNL, she led product development teams for several Silicon Valley start-up companies. At LLNL, she was a group leader in the Micro and Nanotechnology Center working on micro-electro-mechanical systems (MEMS) devices for over 10 years before joining the Laser Inertial Fusion Energy team.

Favorites and noteworthy

- Favorite subjects in high school: Chemistry and physics
- Favorite subject in college: Engineering.

Sabrina Nagel

Post-Doctoral Researcher

Dr. Sabrina Nagel is a post-doctoral researcher at Lawrence Livermore National Laboratory. She is the responsible scientist for DIXI, a new fast x-ray framing camera for the National Ignition Facility (NIF) and regularly runs NIF shots for various campaigns.

She began studying physics at the Julius-Maximillians-University in Wuerzburg, Germany. During her third year, she was awarded a fellowship to continue her studies at the University of Texas at Austin, where she received her M.A. in physics. In 2009, she earned her PhD from Imperial College London, where she studied short-pulse, high-intensity laser plasma interactions.

Sabrina started working at LLNL in 2011 and has been working on the Dilation X-ray Imager (DIXI). DIXI was tested at the JLF facility and has taken first experimental data on experiments at the TITAN laser. She regularly attends international conferences where she gives talks and represents LLNL.

Favorites and noteworthy

- Favorite subjects in high school: Math, English(as a foreign language), biology
- Favorite subject in college: Physics
- Noteworthy accomplishments: Received NI&PS Award – "Outstanding support of DIXI characterization using Comet laser."

Hye-Sook Park

Experimental Physicist

Dr. Hye-Sook Park is an experimental physicist performing science experiments on NIF and many other laser facilities. She received her MS and PhD degrees in physics from the University of Michigan in 1985. Her thesis experiment was on extraterrestrial neutrino detection from the supernova 1987A explosion. Before joining the NIF, she was an astrophysicist searching for optical counterparts to gamma-ray bursts using automated triggered telescope systems.

At NIF, she developed a greater-than-15-keV, high-energy backlighter using short-pulse, high-intensity lasers with micro-flag- and micro-wire-style targets; this technique is now used for many experiments. She is now involved in developing a new class of high-energy-density science research on NIF, involving studies of materials under high pressure, radiation-hydrodynamic supernova Rayleigh–Taylor experiments, and collisionless shock experiments.

Favorites and noteworthy

- Noteworthy accomplishment: Dr. Park was named an American Physical Society fellow in 2010.

Optical Engineering

Shahida Rana

Optical/Laser Scientist

Shahida Rana has been an Optical/Laser Scientist for the NIF Directorate since 2001. She is currently working on Laser Inertial Fusion Energy laser modeling and simulation. Recently, she performed Project Manager duties with Parson's Engineering for a Laser Inertial Fusion Energy project building estimate, project management and integration. She earned her MS in optical engineering and BS in chemistry/physics from the University of Arizona.

While working at NIF, Shahida has contributed successfully to the NIF Readiness Management Self Assessments Program and has designed and worked on several NIF diagnostic optics. She holds several US patents in optical design.

Before joining NIF, she performed project management, optical engineering, and quality assurance assignments at the University of Arizona, Hewlett Packard/Agilent Labs and Kaiser Electronics. She also participated in US Navy, Army and DARPA sponsored research projects and HP international optics projects in UK, Finland and Singapore.

Susana Reyes

Nuclear Engineer

Dr. Susana Reyes is a nuclear engineer at LLNL, with more than 11 years of experience in international fusion projects. She is currently leading theLaser Inertial Fusion Energy effort for licensing and tritium systems. She earned an MS in power engineering from the Polytechnic University of Madrid in 1998 and a PhD in nuclear engineering from the UNED University in Madrid in 2001. She then joined LLNL's Fusion Energy Program to work on the safety analysis of inertial fusion energy power plant designs.

Since then, she has worked in a variety of fusion research projects, such as the U.S. ITER Test Blanket Module program for the testing of tritium breeding blanket concepts within the ITER facility. She has also been strongly involved in neutronics and materials damage simulations at LLNL in support of high-energy accelerators and of NIF.

From 2006 until early 2010, Susana took a leave of absence from LLNL in order to join the ITER Organization in Cadarache, France, to support the project through the performance and coordination of safety analyses and associated documentation in preparation for ITER licensing.

Civil Engineering

Valerie Roberts

Acting Principal Deputy PAD

Valerie Roberts is the Deputy Principal Associate Director, responsible for Operations in the National Ignition Facility and Photon Science Directorate. She earned her bachelor of science degree in construction engineering from Arizona State University, and a master of science in civil engineering from the University of New Mexico.

She first managed the construction of the world's biggest laser—the National Ignition Facility (NIF), a 192-beam laser system the size of three football fields and 85 feet tall, completed in 2001. Currently, she oversees NIF Operations, which includes facilities (office and lab space), utilities (water, electrical, etc.), project and construction management, and environmental safety and hazards. Her job is to keep the place running and make sure organizations get what they need, including staffing and financials.

Favorites and noteworthy

- Favorite subject in high dchool: Math and French
- Favorite Subject in College: Soil and geotechnical materials
- Noteworthy accomplishment: Project manager in charge of construction of the National Ignition Facility, which recently won the Project Management Institute Project of the Year award.

Kathleen Schaffers

Chemist

Dr. Kathleen Schaffers is a chemist for the National Ignition Facility and Photon Science Directorate at Lawrence Livermore National Laboratory (LLNL). She earned her doctorate in inorganic chemistry/materials science from Oregon State University looking for and characterizing new laser materials that had not yet been discovered.

After receiving her doctorate, she performed 1-1/2 years of post-doctoral work at Stanford University where she concentrated on the growth of laser crystals. During this time, she was called by a colleague at LLNL for an interview in the area of crystal growth of new laser materials.

She has been at LLNL for 18 years and is a group leader in NIF. Her main focus is the growth and fabrication of crystals for advanced laser technologies reaching beyond the NIF to the next generation facility.

Favorites and noteworthy

- Favorite subject in high school: Chemistry
- Favorite subject in college: Materials science
- Noteworthy accomplishment: World's expert in the growth of Yb:S-FAP [Yb3+:Sr5(PO4)3F] laser crystals.

Marilyn Schneider

Experimental Physicist

Dr. Marilyn Schneider is an experimental physicist in the Physics Division of the Physical and Life Sciences Directorate at LLNL. She received her AB from Barnard College (Columbia University) with a major in physics and her PhD in physics from Cornell University in 1983.

As a postdoctoral candidate and research associate at Cornell University, she studied the fluctuations of the interface between two fluids near their critical point. She joined LLNL in 1986. At Livermore, she worked on commissioning SUV and VUV beamlines at the Stanford Synchrotron Radiation Lightsource. She studied interface instabilities at the Nova laser and used the LLNL Linear Electric Motor facility to study Rayleigh-Taylor instabilities between two fluids. During NIF commissioning, Dr. Schneider led the beam pointing working group.

Currently, she is continuing her x-ray source development work using short-pulse lasers. She participates in the NIF hohlraum working group, studying images of the laser entrance hole, and she is also part of the LLNL/Atomic Weapons Establishment collaboration fielding radiation transport experiments at the NIF.

Favorites and noteworthy

- Favorite subjects in High School: Geometry
- Favorite subjects in College: Quantum Mechanics
- Favorite (non-physics) activities: jogging cross country, reading mystery novels

Computer Science

Marianne Shaieb

Computer Scientist

Marianne Shaieb is a computer scientist for the National Ignition Facility at Lawrence Livermore National Laboratory (LLNL.) She earned her BS from California State University, Chico.

After graduating from college, Marianne joined LLNL supporting the parts database for the Advanced Laser Isotope Separation (AVLIS) project. She then worked in several roles as team lead and project lead on the EPD Hazardous Waste Tracking System and on the Nuclear Chemistry team developing a Laboratory Information Management System (LIMS) for the tracking and analysis of hazardous and radiological analytical samples. Marianne joined NIF in 2006, working on the Integrated Computer Control System (ICCS) Database Team. She supports the configuration and archive databases and the ConfigEdit interface. She is currently the ICCS Database Schema Design Lead.

Favorites and noteworthy

- Favorite subjects in high school: Math, science, and leadership
- Favorite subjects in college: Computer Programming, database design, systems analysis & design
- Noteworthy accomplishments: Developed Chemistry's Sample Tracking, Analysis and Reporting System; Leading both projects and teams; Migrating ICCS ConfigEdit application to newer web-based technology.

Dawn Shaughnessy

Deputy Progam Element Leader

Dr. Dawn Shaughnessy is the deputy program element leader of the Stockpile Radiochemistry Group in the Chemical Sciences Division. In addition, she is the principal investigator on two LDRD-funded projects, which focus on the collection of refractory debris from NIF for stewardship-relevant measurements and the development of new chemical separation methods for investigating the chemical properties of the heaviest elements.

Dawn received her BS in chemistry in 1993 and a PhD in nuclear chemistry from the University of California, Berkeley, in 2000. After completing a postdoctoral appointment at Lawrence Berkeley National Laboratory, she arrived at LLNL in 2002 as a staff chemist.

Honors received include the Chemistry, Materials, and Life Sciences Leadership Development Program; NNSA/Defense Programs Award of Excellence; Chemical and Materials Science Directorate Exceptional Service Award; and two Chemistry and Materials Science Directorate Certificates of Achievement.

Nuclear Physics

Mary Spaeth

Chief Technical Officer

Mary Spaeth is the Chief Technical Officer for the National Ignition Facility and Photon Science Directorate at Lawrence Livermore National Laboratory (LLNL). She earned her MS degree in nuclear physics at Wayne State University in 1962.

She began her career as a physicist at Hughes Aircraft Company, where she developed the first brassboard laser range finder and invented tunable dye lasers.

From 1975 to 1990, she was a physicist, manager/program leader of the Lawrence Livermore National Laboratory Atomic Vapor Laser Isotope Separation (AVLIS) program in charge of laser system development and systems engineering.

Mary has eight years of experience as a National Ignition Facility (NIF) systems engineer and/or chief technical officer. Spanning her career, she has forty-five years experience in the design, technical integration, and fabrication of large laser systems.

Computer Science

Suzanna Townsend

Software Standards and Quality Manager

Suzy Townsend is a computer scientist and has been supporting NIF since June 2000. Suzy joined LLNL after graduating from California State University Stanislaus with a BS in computer science, a B.A. in mathematics and a minor in chemistry.

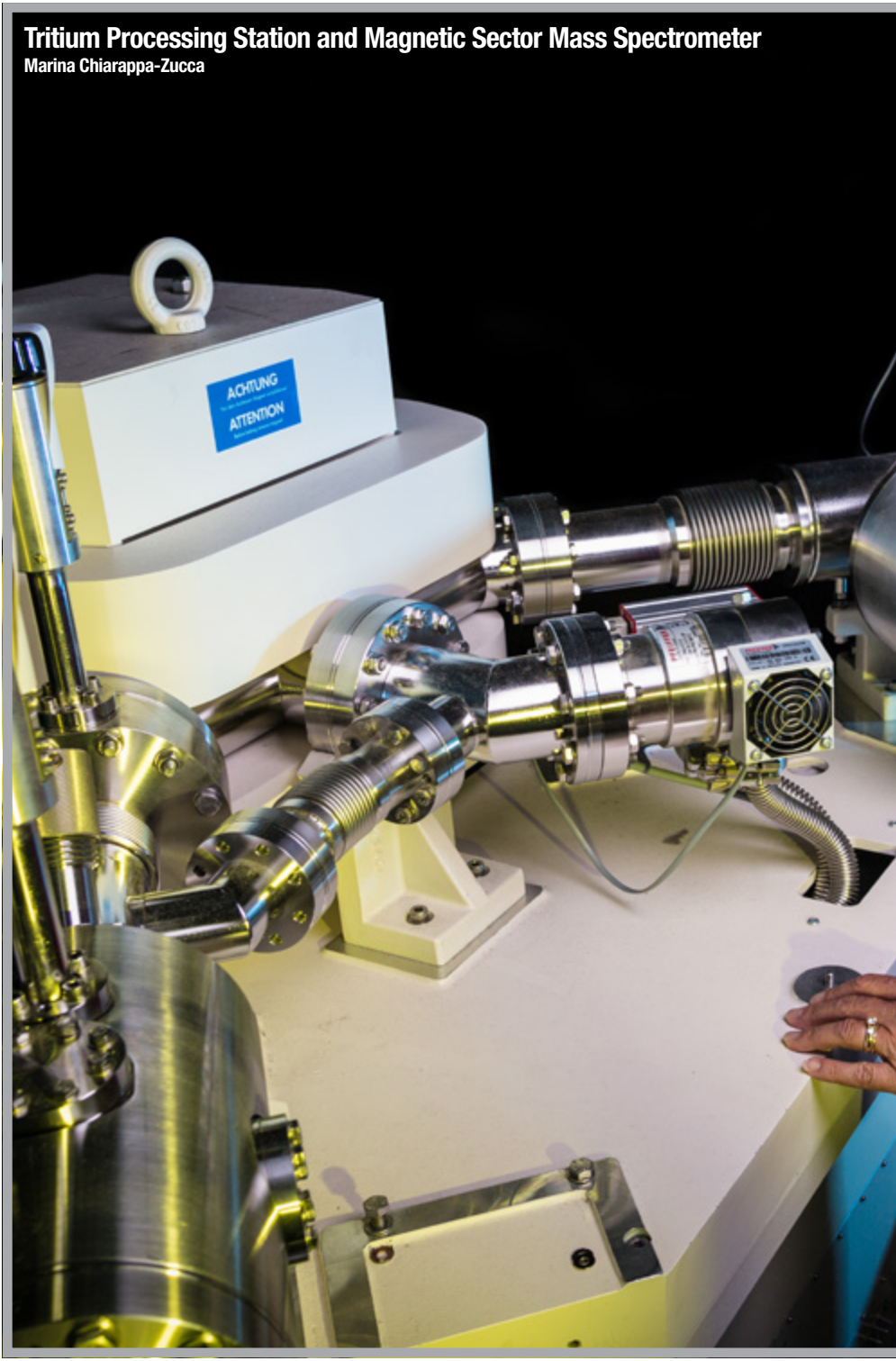
As a Computation employee, Suzy has supported several areas including Hazardous Waste Management, Joint Conflict and Tactical Simulation and NIF's Integrated Computer Control System (ICCS). While at NIF she has worked as an individual contributor, database team lead and controls test team lead as well as her current assignment.

Her career has included multiple administrative Group Lead positions and a recent tenure as the Deputy Division Lead for the NIFC division.

Favorites and noteworthy

- Favorite subjects in high school: Chemistry, physiology, and math
- Favorite subjects in college: Zoology, organic chemistry, math
- Notable Accomplishments: R&D 500 Award (contributions to the Automatic Alignment System for NIF's ICCS), Laboratory Science & Technology Award (contributions to Experiment Automation System for NIF).

Tritium Processing Station and Magnetic Sector Mass Spectrometer
Marina Chiarappa-Zucca



NIF Target
Elizabeth (Beth) Dzenitis working in her lab B298

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